

Compliance Assessment Report

Report ID:
CAR_NRW0035039

This form will report compliance with your permit as determined by an NRW officer

Site	Margam Gases	Permit Ref	BV9713IU		
Operator/Permit holder	BOC Limited				
Regime	Installations				
Date of assessment	18/04/2019	Time in	10:00	Out	13:00
Assessment type	Audit				
Parts of the permit assessed	See Agenda				
Lead officer's name	Jenkins, Nicholas				
Accompanied by					
Recipient's name/position	Robert Warren/ SHEQ Manager	Date issued	04/06/2019		

Section 1 – Compliance Assessment Summary

This is based on the requirements of the permit under the Environmental Permitting Regulations or the licence under the Water Resources Act 1991 as amended by the Water Act 2003. A detailed explanation is captured in "Compliance Assessment Report Detail" (Section 2) and any actions you may need to take are given in the "Action(s)" (section 4). This summary details where we believe any non-compliance with the permit has occurred, the relevant condition and how the non-compliance has been categorised using our Compliance Classification Scheme (CCS). CCS Scores can be consolidated or suspended where appropriate, to reflect the impact of some non-compliances more accurately. For more details of our CCS scheme, contact your local office.

Permit conditions and compliance summary	CCS Category	Condition(s) breached
B3 - Infrastructure - Site drainage engineering (clean and foul)	A	
E5 - Emissions - Waste	X	

KEY: See Section 5 for breach categories, suspended scores will be indicated as such.
A = Assessed or assessed in part (no evidence of non-compliance), **X** = Action only,
O = Ongoing non-compliance, not scored.

Number of breaches recorded	0	Total compliance score (see section 5 for scoring scheme)	0
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If the Number of breaches recorded is greater than zero, please see Section 3 for our proposed enforcement response

Section 2 – Compliance Assessment Report Detail

This section contains a report of our findings and will usually include information on:

- The part(s) of the permit that were assessed (eg. Maintenance, training, combustion plant, etc)
- Where the type of assessment was 'Data Review' details of the report/results triggering the assessment
- Any non-compliances identified
- Any non-compliances with directly applicable legislation
- Details of any multiple non-compliances
- Information on the compliance score accrued inc.
- Details of advice given
- Any other areas of concern
- Any actions requested
- Any examples of good practice
- A reference to photos taken

Attendees

Robert Warren - SHEQ Manager (BOC Gases Ltd)

Nick Jenkins - PPC Officer (Natural Resources Wales)

Agenda

1. Updates from NRW & BOC Gases Ltd – Organisational Design, Brexit, Updates on BRef, BOC/Praxair Merger
 2. Review of previous actions/recommendations CAR_NRW0032259;
 3. Maintenance of effluent pit – Review of the construction of the effluent pit, planned maintenance checks, any actions identified;
 4. Hazardous waste assessment – including classification of hazardous waste, application of the waste hierarchy and consignment of hazardous waste;
 5. Annual Reporting;
 6. Site tour.
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1. Update on NRW – Organisational Design, Brexit, Updates on BRef

NRW's Organisational Design - It was decided that Natural Resources Wales needed to change to meet the ambitions for Wales as set out in the Well-being of Future Generations (Wales) Act 2015 and its Well-being Goals, and the Environment (Wales) Act 2016. NRW now needs to consider how we best provide services to fulfil our purpose and to maximise our contribution to the seven Well-being Goals and to the principles of Sustainable Management of Natural Resources. We need to work differently, in line with the principles set out in the Environment (Wales) act, and even more closely with stakeholders in Wales, to move beyond legislation and create new ways of managing natural resources to create the resilience that will allow us to deliver our purpose.

We are, and will be, seeing significant changes in the environment of Wales – in terms of climate change, population and the economy, public and customer expectations as well as public finances, BREXIT and other new legislation. Our State of the Natural Resources Report (SONARR) published in 2016 and the Welsh Government Natural

Resources Policy that followed sets out these challenges and how we and the rest of Wales need to respond to them.

In Wales we have two new major legislative drivers for setting the direction of NRW. Firstly, we and all other public bodies will need to deliver on the ambitions in the Wellbeing of Future Generations Act through changes in the way we work both internally and with our partners, contributing to the Act's seven Well-being Goals. Secondly the Environment (Wales) Act 2016 sets a new purpose for us and how we should work with others to deliver the Sustainable Management of Natural Resources (SMNR).

The current organisation design within NRW is neither sustainable nor resilient. It does not allow for integrated delivery at a local level and our current ways of working do not allow for staff career development, effective customer focus, management of the organisation and its resources.

It is the objective of the Organisation Design Programme (OD) to deliver a new structure that will address the current shortcomings and to develop the ways of working and cultural changes that we need to ensure the success of NRW into the future. The expectation is that by 1 July 2019, OD will be fully implemented however, no changes are expected from this programme that could result in a change to the regulation of the site from the SW Industry Regulation team. If changes are to be made, these will be shared with BOC at the earliest opportunity.

Brexit - It is an uncertain time for the UK politically as Westminster continues to discuss EU exit and whether we leave with a deal or not. Whilst Welsh Government, UK Government and the European Union continue to discuss options, NRW has been proactively planning for all potential outcomes.

This means that we have two workstreams running in parallel.

1. We have an EU Response programme - this is set up to look at the long-term implications of exiting the EU, with an emphasis on the policies and regulations that sets out how we work.
2. We have established a Strategic Incident No Deal Brexit Board to prepare for the scenario of the UK leaving the EU on 31 October 2019 without a deal and its implications for us in the short term.

In the short-term, information is being made available by the Welsh Government on their Preparing Wales [website](#) and in the [DEFRA](#) technical notes. Many of the decisions that will affect us – and our customers – in the long term will also be made by Welsh Government and Defra, and we will react to information as it emerges.

Updates on Best Available Techniques Reference documents (BRefs) - The operations at BOC, Margam are captured under the large volume inorganic chemicals - solids and other industry BRef. The BRef which was published in 2007, is still the current document and the expectation was that a new and revised BRef would soon be published. This has not been the case and the review process hasn't started for this sector. The expectation is that once an agreement on the UK remaining or leaving the EU has been made, a decision will be made on the progression of the BRef process.

Company merger - The Linde Group and Praxair - BOC Gases' parent company Linde UK Holdings Ltd, merged with Praxair under a merger of equals in an estimated \$83 billion agreement (Reuters.com). We were informed that there will be no changes to BOC Gases in the UK. However, in July 2018, there were changes made to the way that the SHEQ department report. The SHEQ department at Margam now reports directly to the head of environment UK whereas previously the reporting was to area operations manager UK (South). We were advised that this change has been a positive one in that the UK SHEQ department has increased from 4 to 22 and this should drive SHEQ 'to line'. No changes to the way BOC Margam report to NRW are anticipated.

The previous audit at the installation considered BOC's primary and secondary containment of liquids and was only specific to the permitted boundary i.e. the Demin plants. The following areas of concern were raised:

Action/Recommendation	Comments	Completed (Y/N)
There appears to be no link between the PLA forms specified in PLM-13-06-RUK and the work undertaken in the PWI inspections.	It is still unclear of the link between the forms in PLM-13-06-RUK and this will need to be confirmed.	N
There was deterioration of render along bund that hadn't been repaired.	Photographs were shown of the repair and this was confirmed on the site tour.	Y
There was a volume of leaked liquid stored within the bunded area.	Repairs were made to a leaking water valve following the audit but there was still a volume of liquid within the bund during this visit. This will need to be resolved.	Y
Pipework ran on the top of some sections of the bund.	BOC confirmed that the pipework is water and therefore the risk of any breach of the pipework is likely to be low/no impact.	Y
BOC's third-party contractor for tank inspections (R&AK) undertook an inspection following the audit and identified two areas of concern: Mandatory - There was an accumulation of rainwater on the roof which is causing it to bulge inwards. Because of this the roof nozzles were leaning inwards. RAK placed a completion date 26/01/18. Recommendation - There are no holding down bolts installed to anchor the effluent tank to the concrete plinth.	BOC advised that to avoid any further accumulation of rainwater, it had drilled holes in the top of the tank. It had also identified no issues with the integrity of the tank following the bulge or any issues with the nozzles following the deformation of the tank. The newly drilled holes could be a possible breach of containment and this will be discussed later. Anchor points were installed, and these were identified during the site visit.	N

3. Maintenance of effluent pit(s)

Although an assessment was made of the Howmar boiler water treatment chemical storage building during the previous audit, there was slight confusion by the officer around the transfer of waste water from the storage building to the Welsh Water (DCWW) consented discharge point.

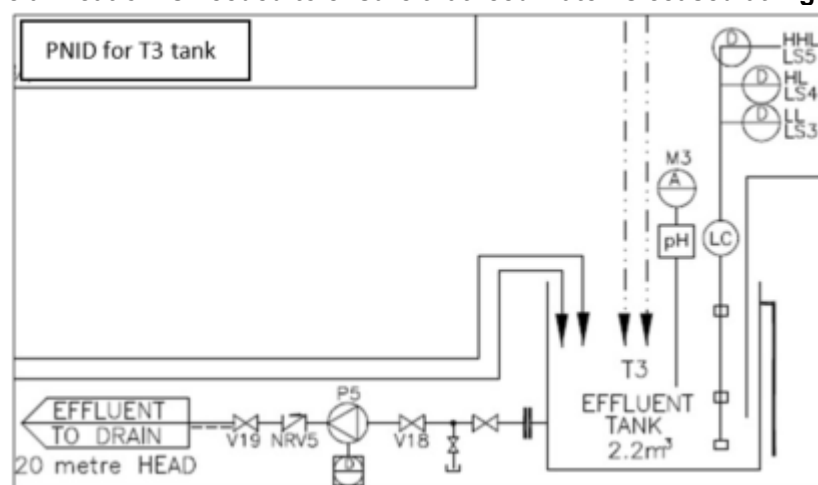
BOC clarified that pH balancing is undertaken within the 2.2m³ effluent tank (T3) located within the Howmar chemical storage building. Once at the correct pH, waste water is pumped to the external 10m³ effluent tank (DT-001) where it is held before being discharged into the BOC combined water network. The network is comprised of a lower sewage pit then an upper sewage pit before entering the DCWW network. The intention was to investigate these sewage pits to ensure the likelihood of any environmental impact is reduced. However, both pits are not located within the permitted boundary and are therefore not under the regulation of NRW. Instead we focused on the quality of the waste water and how BOC ensures compliance with its permit and its consent from DCWW.

In its application for the environmental permit, BOC stated that around 6.6m³/day of effluent is discharged from S1 (DT-001) which is made up of 3.8m³ of boiler blow down and 2.8m³ ion exchange resin regeneration. This effectively

results in approximately 0.8%(w/v) sodium chloride solution, which will be further diluted as it enters the BOC site drainage system. In the same application it advised that the DCWW consent allowed the emission of up to 250m³/day of ambient trade water. Although only 6.6m³/day is generated by the effluent from S1, the remaining site effluent consists of surface water and sewage. BOC's trade effluent consent (Ref D76) was subsequently provided and outlined the following flow rates and composition: maximum quantity of trade effluent on any day shall not exceed 230m³ (20m³ lower than what was specified in BOC application); highest rate discharged shall not exceed 12m³/hr; temperature of effluent shall not exceed 43°C; in addition a number of limits on the amount of metals are included along with a limit on suspended solids and a restriction on oils and grease.

The dosing and pumping of effluent from the T3 tank to tank DT-001 was considered along with the reliability of the system.

The demineralised plant regeneration waste waters consist of dilute hydrochloric acid and caustic solutions which will have first been mixed together in the T3 tank before being discharged to the DT-001 tank. To control the flow to DT-001 the water is pumped once pH values are within permitted limits (pH6-10) and it was made clear from the Process and Instrumentation Diagram (PNID) for the chemical storage building, that the pumps can be shut off locally as well as being remotely accessible. There are a number of level alarms on the effluent system (LL, HL and HHL), but **clarification is needed to ensure that feed water is ceased at high-high level.**



All essential equipment at the BOC plant is contained within the site Systems, Application and Products database (SAP) and this is applicable to the pumps in the chemical storage building. BOC advised that there is one duty pump and no standby, but the risk of failure and the resultant impact is likely to be low.

As presented in section 2 above, BOC has drilled holes into the roof of tank DT-001 to avoid the collection of roof water. It is unclear what impact this may have on the tank and whether the drill holes have been made through the first and second skin of the tank. However, BOC advised that its third-party contractor was satisfied that there were no concerns with the integrity of the tank. This will need to be clarified. **Please could BOC provide confirmation that the holes drilled in the top of the tank is not likely to result in any breach of containment.**

BOC has a site procedure for pH monitoring developed using the analytical procedure template from the SCA Blue Book with reference to the manufacturer's instructions. This refers to the manual readings of pH prior to discharge to S1 emission point. Although this was not requested prior to the audit it was discussed and provided subsequently. 'Margam pH Monitoring Procedure/Guidance' Rev 1 has been reviewed since being developed and is used by the 'shift operators' during their weekly measurements. As with all essential equipment, the pH probe used in this analysis is considered a critical piece of kit along with ISO analysers used in BOC manufacturing of air products.

Recommendation

BOC to clarify that feedwater is ceased at high-high level at tank T3

BOC to confirm the integrity of tank DT-001 following the creation of drill holes in the top.

4. Hazardous Waste Assessment

Directive 2008/98/EC on waste and the associated guidance interpreting the Directive are key to understanding how waste is defined and how it must be handled. An essential part of the Directive is the waste hierarchy. Its primary purpose is to minimise adverse environmental effects from waste and to increase and optimise resource efficiency in waste management and policy.

The hierarchy sets out five possible ways of dealing with waste and prioritises these measures as follows:

- Prevention;
- Preparing for re-use;
- Recycling;
- Other recovery, e.g. energy recovery; and
- Disposal.

This prioritisation lays down a priority order of what constitutes the best overall environmental option in waste legislation and policy. An amendment was made to the Directive in 2018 (Ref Directive (EU) 2018/851) but no changes were made to the hierarchy.

How to comply with your environmental permit – additional guidance for the Inorganic chemical sector (EPR 4.03) states that:

Waste should be recovered unless it is technically or economically impractical to do so. You should list in detail the nature and source of the waste from each activity as the response to the emissions inventory requirement of the Application. Where there are a very large number of relatively small streams it may be appropriate to aggregate similar and comparatively insignificant waste streams.

Indicative BAT

You should where appropriate:

1. Demonstrate that the chosen routes for recovery or disposal represent the best environmental option. Consider avenues for recycling back into the process or reworking for another process wherever possible.
2. Where you cannot avoid disposing of waste, provide a detailed assessment identifying the best environmental options for waste disposal.

Permit condition 1.5 of BOC's permit states that:

1.5.1. The operator shall:

- (a) take appropriate measures to ensure that waste produced by the activities is avoided or reduced, or where waste is produced it is recovered wherever practicable or otherwise disposed of in a manner which minimises its impact on the environment;
- (b) review and record at least every 4 years whether changes to those measures should be made; and
- (c) take any further appropriate measures identified by a review.

BOC confirmed in its application for its environmental permit that there is minimal waste production on the installation. The two plants would typically operate continually for up to two years and during this period there would be no waste generated. Wastes only arose because of maintenance activities (e.g. machine oils) or catalyst/absorbent change-outs. The catalysts typically have a life expectancy of 3-4 years after which they are replaced and the spent catalyst returned to the supplier for recovery. Since the mothballing of the KTI unit, wastes have decreased and in 2017 it advised that around 167 tonnes of waste had been generated, with zero waste being sent to landfill (these figures were not verified).

BOC advised that spent catalysts are sent for regeneration/recovery, typically by return to the supplier, rather than sent for disposal. Typical uses for the recovered catalyst include:

- Nickel oxide-based catalyst from the reformer tubes is recovered for use in stainless steel manufacture;
- Zinc oxide/sulphide from the desulphuriser is sent to a zinc smelter;
- Cobalt, molybdenum, chromium and other metals from the hydrotreater and shift converter are recovered in thermal based processes.

Where quantities are too small for practicable recovery the wastes are disposed of to an appropriately permitted waste facility e.g. the PSA zeolite absorbent (which is changed every 5-10 years).

A selection of waste transfer and hazardous waste consignment notes were reviewed on the day and were subsequently provided by BOC, electronically on the request of the officer.

Hazardous Waste Consignment Ref	Date	Time (hrs)	Component	Consignee Name	Comments
CAD005/N3128	29 08 18	15:40	Sulphuric Acid	Geo Pollution	• Part B – section 1:

				Technologies UK Ltd	The process giving rise to the waste was described as decommissioning and an appropriate SIC was given based on the process. The holder of the waste is responsible for describing the waste therefore the expectation is that this is correct. Part B – section 3: No quantity entered within the table. EWC 150202 was crossed out in the first table but entered in the second box. All other information appears to satisfy the requirements
CAD005/CC984	26 02 19	10:25	Empty oil drums (contaminated) and oil drums	Veolia ES (UK) Ltd	- Part B – section 3: This has been provided as an attached list but is missing quantity in Kgs of the waste leaving site. - Part C section 1: Veolia ES (UK) Ltd has been identified as the carrier whose address is stated as Garston, Liverpool - Carrier Reg CBDU95537. According to the EA's public register, the carrier ref is assigned to Veolia ES (UK) Ltd but the address is Pentonville Rd, London N1 9JY.
NAQ866/W2224	14 07 15	08:45	Used and Unused Katalco 25-4 (desulphuriser catalyst) used and unused Katalco 71-5 (High temperature shift catalyst); Katalco 32-4 (Syntex – zinc oxide); unused alumina (Aluminium oxide)	Veolia ES (UK) Ltd	- Part C: The writing in this section is almost eligible. This is clearer in the driver notes section attached to the consignment note - BOC had created a procedure for catalyst disposal and recovery 'HYDSMR-23-06-MAR'. In this document are the details expected to be used in associated

					consignment notes i.e. hazardous codes, hazardous ingredients and any potential for cross contamination. The document is dated Feb 2009 and is out of date with reference to WM2 and does not correlate to the information provided by Veolia in the consignment note. This will need to be updated.	
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Consignee returns were requested from the Environment Agency (EA) as two of the entries outlined in the table above meant that waste has left Wales:

CAD005/CC984 – Part E of the consignment note submitted by BOC matches the details supplied by the EA. Waste consigned under this note is destined for recovery (R13 – Storage pending recovery)

NAQ866/W2224 – No consignee returns were provided by BOC for this movement of waste. EA waste records suggest that 3 wastes were received on this note (160507; 160802; 150110), however only 2 waste types were specified in part B of the paperwork provided by BOC i.e. **160507** (Unused Katalco 25-4 and 71-5) and **160802** (Used Katalco 25-4/57-4 and Used Katalco 41-6, 32-4 and 71-5). The three waste types in the EA consignee returns are destined for disposal (D15 – Storage pending disposal). As described above, BOC stated that spent catalyst is 'sent for regeneration/recovery, typically by return to the supplier, rather than sent for disposal'. This doesn't seem to match the final destination of the catalysts in the notes provided. It is also clear that unused catalyst is also sent for disposal.

BOC has a defined list of responsible waste management officers who are trained based on exposure to specific aspects of their role. Training is managed through Traccess which links to the management system and it is the SHEQ department who has developed training beyond the Traccess system to further develop officers including: Waste transfer notes; waste consignment notes; waste carriers. The SHEQ manager is responsible for the checking of waste registrations and waste statistics. When shown some of the training completed and the associated dates, some responsible officers were found to be last trained in 2014 and 2015. This maybe an oversight but **where staff who are required to understand the waste process, ensure that training records are up to date or refreshed at regular intervals.**

Recommendations

BOC to ensure that all information required in the consignment notes are correct and legible;

BOC to update the procedure for catalyst disposal and recovery 'HYDSMR-23-06-MAR' before any further catalyst is removed from site;

BOC to undertake a review of waste registrations, carrier registrations to ensure that the information contained within the consignment notes are correct;

BOC to confirm whether used and unused catalyst is sent for disposal/recovery based on its description provided in its application;

BOC to update, if appropriate, its training records for responsible waste officers.

5. Annual Reporting

We discussed the 2018 annual report in which data for air emissions was provided not in accordance with the reference period specified in the permit. This oversight was outlined in CAR_NRW0034821 and a subsequent analysis has been planned. All other aspects of the annual report except for water usage were satisfied.

6. Site tour

We toured the permitted installation and clarified any outstanding issues that were carried over from the previous visit to the site.

[END]

EPR Compliance Assessment Report

**Report ID:
CAR_NRW0035039**

This form will report compliance with your permit as determined by an NRW officer

Site	Margam Gases	Permit Ref	BV9713IU
Operator/Permit holder	BOC Limited	Date	18/04/2019

Section 3 – Enforcement Response

You must take immediate action to rectify any non-compliance and prevent repetition. Non-compliance with your permit conditions constitutes an offence and can result in criminal prosecutions and/or suspension or revocation of a permit. Please read the detailed assessment in Section 2 and the steps you need to take in Section 4 below.

Section 4 – Action(s)

This section summarises the actions identified during the assessment along with the timescales for when they will need to be completed.

Criteria Ref.	CCS Category	Action required/advised	Due Date
See Section 1 above			
E5	X	BOC to confirm whether used and unused catalyst is sent for disposal/recovery based on its description provided in its application and the consignee returns	05/07/2019

Section 5 – Compliance notes for the Operator

To ensure you correct actual or potential non-compliance we may

- Advise on corrective actions verbally or in writing
- Require you to take specific actions verbally or in writing
- Issue a notice
- Require you to review your procedures or management system
- Change some of the conditions of your permit
- Decide to undertake a full review of your permit

Any breach of a permit condition is an offence and we may take legal action against you

- We will normally provide advice and guidance to assist you to come back into compliance either after an offence is committed or where we consider that an offence is likely to be committed. This is without prejudice to any other enforcement response that we consider may be required.
- Enforcement action can include the issue of a formal caution, prosecution, the service of a notice and/or suspension or revocation of the permit.

See our Enforcement and Civil Sanctions guidance for further information

This report does not relieve the site operator of the responsibility to

- Ensure you comply with the conditions of the permit at all times and prevent pollution of the environment
- Ensure you comply with other legislative provisions which may apply

Non-compliance scores and categories

CCS category	Description	Score
C1	A non-compliance that could have a major environmental effect	60
C2	A non-compliance which could have a significant environmental effect	31
C3	A non-compliance which could have a minor environmental effect	4
C4	A non-compliance which has no potential environmental effect	0.1

Operational Risk Appraisal (Opra) - Compliance assessment findings may affect your Opra score and/or your charges. This score influences the resource we use to assess permit compliance.

Section 6 – General information

Data protection notice

The information on this form will be processed by the Natural Resources Wales (NRW) to fulfil its regulatory and monitoring functions and to maintain the relevant public register(s). The NRW may also use and/or disclose it in connection with:

- Offering/providing you with its literature/services relating to environmental matters
- Consulting with the public, public bodies and other organisations (eg. Health and Safety Executive, local authorities) on environmental issues
- Carrying out statistical analysis, research and development on environmental issues
- Providing public register information to enquirers
- Investigating possible breaches of environmental law
- Assessing customer service satisfaction and improving its service
- Freedom of Information Act/Environmental Regulations request

The NRW may pass it on to its agents/representatives to do these things on its behalf. You should ensure that any persons named on this form are informed of the contents of this data protection notice.

Disclosure of information

The NRW will provide a copy of this report to the public register(s). However, if you consider that any information contained in this report should not be released to the public register(s) on the grounds of commercial confidentiality, you must write to your local area office within fifteen working days of receipt of this form indicating which information it concerns and why it should not be released, giving your reasons in full.

Customer charter

What can I do if I disagree with this compliance assessment report?

If you are unable to resolve the issue with your site officer, you should firstly discuss the matter with officer's line managers using the informal appeals procedure. If you wish to raise your dispute further through our official Complaints and Commendations procedure, phone our general enquiry number 0300 065 3000 (Mon to Fri 08.00 – 18.00) and ask for the Customer Contact team or send an email to enquiries@naturalresourceswales.gov.uk. If you are still dissatisfied you can make a complaint to the Public Services Ombudsman for Wales. For advice on how to complain to the Ombudsman phone their helpline on 0845 607 0987.

Welsh Language

If you would like this form in Welsh please contact your Regulatory Officer.